

Six strands to be wound on glass reels, placed in tube, and sterilized for half an hour, once only, one reel in each tube.

4. Lakeside Hospital, Cleveland. Silk is bought from local supply-house, is wound on glass reels, and put in glass tubes, with a layer of non-absorbent cotton between each reel and the non-absorbent cotton stopper. Sterilize in the autoclave half an hour. Linen thread is being used as much as the silk, and it is put up and sterilized in the same way.

5. Lying-in Hospital. Wash in hot water with tinct. green soap. Boil in 1 per cent. lysol solution thirty minutes. Rinse thoroughly in sterile water just before use.

6. Syms Operating-Room. Wind on small glass reels, place in tubes cotton plugged, sterilize one-half hour at twelve pounds pressure on two days.

*To be continued.*

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## NOTES ON THE TREATMENT OF PULMONARY TUBERCULOSIS \*

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THE present aim in the treatment of pulmonary tuberculosis is to raise the defensive powers of the body, until we obtain a serum that shall have sufficient antitoxic and bactericidal powers to artificially increase those defenses. How shall we raise the natural defenses in the body? We cannot do it by iron or digitalis, nor by the use of oils and malts or hypophosphites. Of what particular value are these or any other medicinal measures in the treatment of pulmonary tuberculosis? Do they increase the body defenses? Have they any effect upon the dense envelope of the biologically active tubercle bacillus or upon its products? Can it be said that in any way they raise the natural defenses of the body as we now understand them? The most ghost-like faces of patients affected by pulmonary tuberculosis look out from dusty occupations in grimy work-shops; from the rooms of high-priced tenements they cry out for relief. Do these people take drugs when they need air, malt and oils when they can hardly afford to buy butter? Are they directed to exercise when they should have rest? What is there

\* Reprinted from the *Journal of Outdoor Life*.

that can so increase the natural antitoxins in the body as air and sunlight, food and rest and freedom from dust? Are not these of more value than all else in the treatment of pulmonary tuberculosis? Must they not be our main reliance until we get an antitoxin serum of high defensive power? And when we get a serum, must not even the serum be secondary to these? If we had to-day a serum whose antitoxic or bactericidal powers, or both, would increase the defenses of the body against tubercular disease, would we be much better off so long as our people live under such conditions as those which help to make tuberculosis?

And if we were really to influence this disease markedly by the use of an antitoxin, would we not raise a barrier against one disease only to allow some other disease to come in as the penalty which many must pay for too much civilization? These are some questions which we must ask ourselves, and to which as a people and as a profession we must soon give an answer.

But the resisting power of the individual—how to increase that? Must we wait until tubercular disease has made its attack before we increase that individual resisting power? Do we as a profession recommend that our child patients have their tonsils and especially their adenoids removed, so that these possible portals of infection may be closed? Do we ask that our little patients go to the dentist, not that their teeth be filled or extracted, but that they be regularly and systematically cleaned, and thus saved? Do we explain to mothers and fathers the effect of mouth breathing on the teeth, and do we tell our patients who employ us and trust us all the late remote effects of mouth breathing upon the teeth, and the effects of the decay of the teeth upon the decay of the whole organism? Later, when post-nasal obstructions have given rise to fixed changes in the upper air passages and in the teeth, and these have so combined as to produce nutritional changes in the whole body, then, even then, is our attention directed to that care of the upper air passages, of the mouth, and of the teeth, that the organism with its lessened resisting power demands? A well patient must breathe and chew to live. How much more necessary is it that a sick patient should properly aerate his tissues and should properly masticate his food in a clean mouth and with clean teeth. In the past eighteen months I have examined about one hundred and fifty patients with more or less evident tuberculosis, and in about two per cent. of the cases have the teeth been moderately clean. Most of these patients had mouths that were foul beyond description. Nearly all of them had been under treatment for pulmonary tuberculosis from several months to one or two

years. One patient who had been in a well-known sanatorium for several months had a collection of salivary salts bacteria and other stuff on his teeth, in places a quarter of an inch thick. Few of these patients have ever regularly used a tooth-brush.

Nasal obstruction, hypertrophied tonsils, and untreated chronic nasopharyngeal disease were found in a majority of the patients examined. Now, all of these patients had been taking medicine of some kind, and yet with dirty mouths and obstructed nasal cavities only a small percentage of them had been directed by their physicians to sit out of doors, to sleep with their windows open, or to systematically use a tooth-brush.

Many patients coming to the Municipal Hospital, complaining of nausea, vomiting, loss of appetite, constipation, wakefulness, and the other symptoms associated with pulmonary tuberculosis, were relieved by air and food and rest, with occasional doses of cathartic medicine. In the absence of chronic gastric catarrh, requiring lavage, thoroughly cleaning the teeth at the dental clinic usually relieved the nausea, the vomiting was lessened and finally ceased altogether. Life in the open air day and night, rest when the temperature and pulse are above 100, graduated exercises, beginning with a few minutes each day, attention to the teeth, nose, and throat, and the administration of cathartics, are the things that produce results in the treatment of pulmonary tuberculosis.

The treatment of pulmonary tuberculosis to-day is the treatment that I have outlined, together with that discipline which enforces the strict habits of life. Such treatment has for its object the increase of defensive organisms within the body. Some day, very soon, these natural defenses may be aided by an antitoxin, but when the antitoxin comes the results obtained from its use will be secondary to such treatment as I have herein described.

The treatment of tuberculosis can never degenerate into, nor can it ever be successful through, merely squirting a serum underneath the skin, without that regard for general and personal hygienic conditions which pulmonary tuberculosis demands.

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THIRTY additional physicians have recently been appointed as school inspectors in Boston, making a total of eighty.